UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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SEP 16 1999

REPLY TO THE ATTENTION OF: SRF-5J

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Mr. Johnny W. Reising
United States Department of Energy
Fernald Area Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705

Subject: Technical Review of U.S. DOE Responses to U.S. EPA Comments on Revised Real-Time In Situ Gamma Spectrometry Reports and Documentation to Support the Use of High-Purity Germanium Detectors to Perform Final Soil Certification for Primary Radionuclides

Dear Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the responses to the above-referenced reports and documentation as part of its oversight activities for the Fernald Environmental Management Project (FEMP). The response package, dated June 11, 1999, was prepared by Fluor Daniel Fernald for the U.S. Department of Energy (U.S. DOE) and consist of the following:

- "Comparability of In Situ Gamma Spectrometry and Laboratory Data, Revision 1,"
- "Comparability of In Situ Gamma Spectrometry and Laboratory Data and Decisions for Certification Units, Revision 0,"
- "Radiation Tracking System (RTRAK) Applicability Study, Revision 2"
- Draft Data Validation Checklist for Validating High-Purity Germanium Detector Measurements to Analytical Support Level D
- Updated Section 2.5, (Revision B), for incorporation into User's Manual, entitled "Certification"
- Updated Section 3.7, (Revision B), for incorporation into User's Manual, entitled "Certification Measurements"

The reports and documentation provide the results of recent studies on the real-time gamma spectrometry instruments and proposals for their future use at the site. U.S. EPA reviewed the response package to assess whether U.S. DOE adequately addressed U.S. EPA comments on the January 1999 real-time documents. U.S. EPA's review found that the responses are generally acceptable; however, responses pertaining to the RTRAK study and comparability study are incomplete because they require further study or discussion, or are inherently unresolvable.

U.S. EPA still finds numerous deficiencies in the application of in situ spectrometry to final certification. Many of the deficiencies appear unresolvable due to the inherent technical limitations of in situ spectrometry and environmental factors at Fernald. Major deficiencies with the application of in situ spectrometry to final certification include:

- Challenges presented by natural radon emanation and problems with definitive radium quantization prohibit the use of in situ spectrometry as a certification tool for radium isotopes.

- Certification decisions for hazardous contaminants will be based on laboratory analytical results. Since certification decisions for radium 226 and some other isotopes (for example, technetium 99) would also have to be based on laboratory analytical results, the overall effectiveness and cost savings resulting from certification usage of in situ spectrometry is not apparent.
- The precision of uranium and radium measurements near their final remediation levels (FRLs) has not been effectively demonstrated.
- Accuracy cannot be effectively defined for in situ HPGe detector measurements, because no matrix spike measurements are performed.

Expedited remedial actions, hot spot delineation and pre-certification have all been areas where the real time program has been beneficial. The Real Time Program has proven to be time and cost effective in its current application; the efforts for improvement have resulted in a more robust program at FEMP.

While U.S. EPA does not recommend use or further development of in situ gamma spectrometry for final certification of primary radionuclides, U.S. EPA does recommend using the existing Agency-approved excavation and certification strategy while continuing the development and application of in situ spectrometry where it can serve as an effective screening tool. Please contact me at (312) 886-4591 if you have any questions.

Sincerely,

Gene Jablonowski
Remedial Project Manager
Federal Facilities Section
SFD Remedial Response Branch #2

cc: Tom Schneider, OEPA-SWDO
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